

## **EXHIBIT A**

**Abdul Malik, Ph.D.****BIOGRAPHICAL SKETCH****Abdul MALIK, Ph.D.**

Associate Professor, Department of Chemistry, University of South Florida,  
4202 E. Fowler Avenue, SCA 400, Tampa, FL 33620-5250.

Phone: 813-974-9688; FAX: 813-974-3203

E-mail: [malik@mail.cas.usf.edu](mailto:malik@mail.cas.usf.edu)

<http://www.cas.usf.edu/chemistry/faculty/malik.html>

**Employment:**

- Aug. '99- Present      **Associate Professor** of Chemistry, University of South Florida, Tampa, Florida, USA.
- Apr. 96-Present      **Coordinator**, Analytical Chemistry Division, Department of Chemistry, University of South Florida, Tampa, Florida, USA.
- Aug. '94-Aug. 99:      **Assistant Professor** of Chemistry, University of South Florida, Tampa, Florida, USA.
- Sep. '92-Jul. '94:      **Research Assistant Professor** of Chemistry, Brigham Young Univ., Provo, Utah, USA.
- Jan. '91-Aug. '92:      **Postdoctoral Research Associate**, Department of Chemistry, Brigham Young University, Provo, Utah, USA.
- Oct. '89-Dec. '90:      **Research Fellow** (Japanese Ministry of Education), Toyohashi University of Technology, Toyohashi, Japan.

**Areas of Specialization**

**Analytical Separations:**      High Resolution Gas Chromatography, High Performance Capillary Electrophoresis, Supercritical Fluid Chromatography, High Performance Liquid Chromatography, Biomedical and Environmental Applications of Chromatographic, Electrophoretic, and Hyphenated Techniques;

**Sample Preparation:**      Solid-Phase Microextraction (SPME), Capillary Microextraction (CME), Supercritical Fluid Extraction (SFE).

**Education:**

Ph.D., Russian Academy of Sciences, Moscow, Russia, 1985.  
M.S., Peoples' Friendship University, Moscow, Russia, 1980.  
Pre-college education in Bangladesh.

**Abdul Malik, Ph.D.****Scientific Recognition**

- **Guest Editor, *Journal of Chromatography A*, Vol. 1025, No. 1, 2004.**
- **General Chair, 5<sup>th</sup> International Symposium on Advances in Extraction Technologies (ExTech 2003), St. Pete Beach, Florida, USA, March 5-7, 2003.**
- **Outstanding Undergraduate Teaching Award, University of South Florida Chemistry Department, 2003.**
- **Our pioneering research in the area of sol-gel column technology has made the front covers of:**
  - (a) **Popular Analytical Chemistry Textbook by Daniel C. Harris, (Ref. *Quantitative Chemical Analysis*, 6<sup>th</sup> edition, Freeman, New York, USA, 2002);**
  - (b) **Analytical Chemistry – the premier journal in the field of our research (Ref. *Anal. Chem.* 1997, 69, 4556-4566).**
- **Selected as the Editorial Advisory Board Member of an International Journal- *Journal of Microcolumn Separations* (2001).**
- **Member of the Scientific Committee, International Symposium on Advances in Extraction Technologies (ExTech) – an annual series symposium, since 2000.**
- **Recognized by American Laboratory Magazine (July 2000, News Edition, Editor's page) for our research on sol-gel monolithic column technology for capillary electrochromatography that was termed by the magazine "Best of Both worlds."**
- **Received University Development Fund (UDF) Award (1999 & 2000), sponsored by Dow Chemical Company.**
- **Recognized for the best teaching performance in 1999 among twenty-three full-time faculty members in the USF chemistry department.**
- **Excellence in Teaching and Mentorship at the Master's Level: Director of the USF Outstanding Master's Thesis (1998).**
- **USF College of Arts and Sciences Faculty Development Award (1997, 1998).**
- **University of South Florida Faculty International Travel Grant Award (1998).**
- **University of South Florida Research and Creative Scholarship Award (1995, 1997).**
- **USF College of Arts and Sciences Faculty Development Award (1997).**

**Abdul Malik, Ph.D.**

- Alternate winner of the **Presidential Young Faculty Award**, University of South Florida (1996).
- University of South Florida **Research and Creative Scholarship Award** (1995).
- Japanese Ministry of Education Research Fellowship (1989-1990).

**Professional Affiliations:**

- Member of: (1) American Chemical Society; (2) American Association for the Advancement of Science.
- Member of the Editorial Advisory Board of the International Journal: *Journal of Microcolumn Separations*
- Scientific Reviewer: Eleven International Journals.

**Publications:** Over Eighty papers published in refereed international journals

**Patents:** Twelve (in total):  
Six Awarded (Three US Patents, One Australian patent, and two (former) USSR Patents);  
Eight U.S. Patent Applications Pending

**Presentations at National and International Symposia:** Over 100.

***General Chair:*** Fifth International Symposium on the Advances in Extraction Technologies (ExTech 2003, March 5-7, 2003, Tampa, Florida, USA).

***Session Chair:*** At Four International Symposia on chromatography held in USA, Italy, and China.

***Plenary Lectures:*** Seven (at five international Symposia on Chromatography held in USA, Japan, Italy, and China).

***Invited Lectures:*** Thirty-five (at National and International Symposia on Chromatography)

**Recent Publications:**

W. Li, D.P. Fries, A. Malik, Negatively Charged Sol-Gel Column with Stable Electroosmotic Flow for Online Preconcentration of Zwitterionic Biomolecules in Capillary Electromigration Separations, *J. Sep. Sci.* 2005, accepted (04.26.2005).

**Abdul Malik, Ph.D.**

P. Yang, R.J. Whelan, E.E. Jameson, J.J.I. Kurzer, C. Carter-Su, A. Kabir, A. Malik, R.T. Kennedy, Capillary Electrophoresis and Fluorescence Anisotropy for Quantitative Analysis of Rapid Peptide-Protein Interactions using JAK2 and SH2-B $\beta$  as a Model System, *Anal. Chem.* 2005, 77(8), 2482-2489

K. Alhooshani, A. Kabir, A. Malik, "Sol-Gel Zirconia-based Hybrid Organic-Inorganic Stationary Phase for Capillary Microextraction in Hyphenation with Gas Chromatographic Analysis," *J. Chromatogr. A* 2005, 1062, 1-14.

A. Malik, "Sample Preconcentration Tubes with Sol-gel Surface coatings and/or Sol-gel Monolithic Beds," US Patent No. 6,783,680 B2 (Date of Patent August 31, 2004).

A. Malik, D.-X. Wang, Solid-Phase Microextraction Fiber Structure and Method of Making, US Patent No. 6759126, issue date: July 6, 2004.

T.-Y. Kim, Alhooshani, K.; Kabir, A.; D.P. Fries, A. Malik, "High pH-Resistant, surface-bonded Sol-Gel Titania Hybrid Organic-Inorganic Coating for Effective On-line Hyphenation of Capillary Microextraction (In-Tube SPME) with High-Performance Liquid Chromatography", *J. Chromatogr. A* 2004, 1047(2), 165-174.

A. Kabir, C. Hamlet, A. Malik, "Parts per Quadrillion Level Ultra-trace Analysis of Polar and Nonpolar Compounds via Solventless Microextraction on Sol-Gel Polytetrahydrofuran Coated Capillaries and Gas Chromatography-Flame Ionization Detection", *J. Chromatogr. A* 2004, 1047(1), 1-13.

W. Li, D.P. Fries, A. Malik, "Sol-Gel Stationary Phases for Capillary Electrochromatography," *J. Chromatogr. A* 2004, 1044 (1-2), 23-52.

A. Kabir, C. Hamlet, K.S. Yoo, G.R. Newkome, and A. Malik, "Capillary Microextraction on Sol-Gel Dendrimer Coatings", *J. Chromatogr. A* 2004, 1034(1-2), 1-11.

A. Malik, D.X. Wang, "Capillary Column and Method of Making," Australian Patent #765881, January 15, 2004.

A. Malik, "Foreword", *J. Chromatogr. A* 2004, 1025 (1), 1.

W. Li, D.P. Fries, A. Ali, A. Malik, "Positively Charged Sol-Gel Coatings for On-line Preconcentration of Amino Acids in Capillary Electrophoresis," *Anal. Chem.* 2004, 76 (1), 218-227.

C. Shende, A. Kabir, E. Townsend, A. Malik, "Sol-gel Polyethylene Glycol Stationary Phase for High-Resolution Capillary Gas Chromatography," *Anal. Chem.* 2003, 75 (14) 3518-3530.  
80. D.X. Wang, A. Malik, "Inspection of Thermo stability of Sol-gel Capillary Column in Gas Chromatography," *Chin. J. Anal. Chem.* 2003, 31 (4), 467-471.

**Abdul Malik, Ph.D.**

D. D. Buchanan, E.E. Jameson, J. Perlette, **A. Malik**, R.T. Kennedy, "Effect of buffer, electric field, and separation time on detection of aptamer-ligand complexes for affinity probe capillary electrophoresis" *Electrophoresis* **2003**, *24* (9), 1375-1382.

**A. Malik**, "New Polymeric Extraction Materials" In *Sampling and Sample Preparation (Comprehensive Analytical Chemistry, Vol. XXXVII)*, edited by J. Pawliszyn, Elsevier, Amsterdam, **2002**, Ch. 32, pp. 1023-1080.

D.X. Wang, **A. Malik**, "Comparison of the capacity of a sol-gel-coated poly(dimethylsiloxane) capillary column and a conventional column, *Chin. J. Chromatogr.* **2002**, *20* (6), 534-536.

**A. Malik**, "Advances in Sol-Gel Based Columns for Capillary Electro-chromatography. Part I. Sol-Gel Open Tubular Columns," *Electrophoresis* **2002**, *23*, 3973-3992.

**A. Malik**, JACS Book Review, *Multidimensional Chromatography*, (Edited by L. Mondello, A. C. Lewis, and K.D. Bartle), Wiley, New York, **2002**, 436 pp., *J. Am. Chem. Soc.* **2002**, 124.

D. D. Buchanan, E.E. Jameson, J. Perlette, **A. Malik**, R.T. Kennedy, "Effect of separation conditions on detection of aptamer-ligand complexes for affinity probe capillary electrophoresis" *Electrophoresis* **2002**, accepted.

D.-X. Wang, **A. Malik**, "Preparation of Capillary Gas Chromatographic Columns for Separation of Polar Organic Compounds by Sol-Gel Method," *Chin. J. Chromatogr.* **2002**, *20* (3), 279-282.

**A. Malik**, K. Alhooshani, "Tube Structure with sol-gel Zirconia coatings, and Method of Making," US Provisional Patent Application, **2002** (Invention disclosure submitted to USF patent office on June 21, 2002).

**A. Malik**, W. Li, D.P. Fries, "Method for Sample Preconcentration in Capillary Electrophoresis Using Sol-Gel Media," US Provisional Patent Application, **2002** (Invention disclosure submitted to USF patent office on June 21, 2002).

S. Biglum, J. Medlar, A. Kabir, C. Shende, A. Alli, **A. Malik**, "Sol-gel Capillary Microextraction," *Anal. Chem.* **2002**, *74* (4), 752-761.

**A. Malik**; D.X. Wang "Capillary Column and Method of Making" World Patent **2001** No. 2000011463.

G.R. Newkome, K.S. Yoo, A. Kabir, **A. Malik**, "Synthesis of Benzyl-terminated Dendron for Use in High-Resolution Capillary Gas Chromatography," *Tetrahedron Lett.* **2001**, *42*, 7537-7541.

**A. Malik**, A. Kabir, G.R. Newkome, K.S. Yoo, "Separation column with Sol-gel Dendrimer Stationary Phases and Method of Making," Provisional US Patent Application, May **2001**, submitted.

**Abdul Malik, Ph.D.**

A. Malik, A. Kabir, C. Shende, "High-efficiency Sol-gel Capillary GC Columns of Enhanced Baseline Stability and Method of Making," Submitted for US Patent, March 2001.

J.D. Hayes, A. Malik, "Sol-Gel Open Tubular ODS Columns with Reversed Electroosmotic Flow for Capillary Electrochromatography," *Anal. Chem.* 2001, 73 (5) 987-996.

A. Malik, "Sample Preconcentration Tubes with Sol-gel Surface Coatings and/or Sol-gel Monolithic Beds," US provisional patent application, October, 2000, submitted.

J.D. Hayes, A. Malik, "Sol-gel Monolithic Columns with Reversed electroosmotic Flow for Capillary Electrochromatography," *Anal. Chem.* 2000, 72 (17), 4090-4099.

A. Malik and J.D. Hayes, "Surface-Bonded Sol-Gel Monolithic Separation Bed and Method of Making," US Patent Application, January 2000, submitted.

Y.-D. Hong, S.-W. Namgung, M. Yoshida, A. Malik, "Determination of Ultra-micro Amounts of Sulfur in Igneous Rocks by Spectrofluorimetry Using 2-(o- hydroxyphenyl) Benzoxazole Derivatization and Tin(II)-Strong Phosphoric Acid-assisted Reduction," *Talanta*, 2000, 51, 291-301.

**Recent Invited Presentations:**

Abdul Malik, A. Kabir, S. Kulkarni, L. Fang, A. Shearrow, K. Alhooshani, T.Y. Kim, "Sol-Gel Polar Stationary Phases for Capillary-based Separation and Solvent-free Extraction Methods," Invited lecture at the 28<sup>th</sup> International Symposium on Capillary Chromatography and Electrophoresis, Las Vegas, USA, May 22-25, 2005.

A. Malik, A. Kabir, T.-Y. Kim, W. Li, K. Alhooshani, S. Kulkarni, L. Fang, A. Shearrow, "Sol-gel Coatings and Monolithic Beds in Analytical Microseparation and Sample Preconcentration," Invited lecture at the graduate seminar, department of Chemistry and Biochemistry, Southern Illinois University, Carbondale, April 22, 2005.

A. Malik, A. Kabir, W. Li, T.-Y. Kim, K. Alhooshani, "Sol-Gel Organic-Inorganic Hybrid Materials for Selective Enhancement and Ultra-Trace Analysis of Organic Pollutants in Aqueous Media," Oral presentation at the 56<sup>th</sup> Pittsburgh conference (Pittcon 2005), Orlando, Florida, February 26- March 4, 2005.

A. Malik, K. Alhooshani, T.-Y. Kim, A. Kabir, W. Li, S. Kulkarni, L. Fang, "Sol-gel Titania- and Zirconia-Based Organic-Inorganic Hybrid Materials for Solventless Microextraction of Trace Analytes," Sixth International Symposium on Advances in Extraction Technologies (ExTech 2004), Leipzig, Germany, September 6-8, 2004.

W. Li, T.-Y. Kim, K. Alhooshani, A. Kabir, S. Kulkarni, D.P. Fries, A. Malik, "Novel Sol-gel Strategies for On-line Preconcentration of Biomolecules and Environmental Pollutants in Liquid-

**Abdul Malik, Ph.D.**

Phase Trace Analysis," **Plenary Lecture, 27<sup>th</sup> International Symposium on Capillary Chromatography**, Riva del Garda, Italy, May 31-June 4, 2004.

A. Malik, W. Li, K. Alhooshani, T.-Y. Kim, S. Kulkarni, and A. Acevedo, **Sol-Gel Stationary Phases In Analytical Microseparations: Current Status And Future Trends," Invited Lecture at 2004 Florida Annual Meeting and Exposition of the American Chemical Society (FAME 2004)**, Orlando, Florida, May 6-8, 2004.

A. Malik, T.-Y. Kim, K. Alhooshani, S. Kulkarni, A. Kabir, W. Li, J. Medlar, **Transition Metal Oxide-Based Organic-Inorganic Hybrid Sol-Gel Stationary Phases" Invited Lecture at the 26<sup>th</sup> International Symposium on Capillary Chromatography and Electrophoresis**, Las Vegas, USA, May 18-22, 2003.

A. Malik, A. Kabir, W. Li, K. Alhooshani, T.-Y. Kim, and J. Medlar, **"New Direction in Stationary Phase Technology for Analytical Microseparations – The Sol-Gel Approach" Invited Lecture at 2003 Florida Annual Meeting and Exposition of the American Chemical Society (FAME 2003)**, Orlando, Florida, May 8-10, 2003. Abstract # 86, p. 45.

W. Li, T.-Y. Kim, K. Alhooshani, A. Kabir, C. Shende, A. Malik, **"Sol-Gel Materials for the Preconcentration and Separation of Biomolecules" Invited Lecture at the Pittsburgh Conference**, Orlando, Florida, March 9-14, 2003.

A. Malik, W. Li, A. Kabir, C. Hamlet, K. Alhooshani, J. Medlar, T.-Y. Kim, and S. Kulkarni, **"Sol-Gel Stationary Phases in Analytical Microextraction" Invited Lecture, Fifth International Symposium on Advances in Extraction Technologies (ExTech 2003)**, St. Pete Beach, Florida, USA, March 5-7, 2003.

W. Li, K. Alhooshani, T.-Y. Kim, C. Shende, A. Kabir, A. Malik, **"Sol-Gel Chemistry in Separation Science," Invited Lecture at the 2002 Eastern Analytical Symposium**, Somerset, New Jersey, November 18-21, 2002.

W. Li, K. Alhooshani, T.-Y. Kim, C. Shende, A. Kabir, A. Malik, **Sol-Gel Coatings and Monolithic Beds for Analytical Microseparations and Sample Preconcentrations, Invited Lecture at the Analytical Division Seminar of the Department of Chemistry, Florida State University, Tallahassee, Florida, USA, October 31, 2002.**

A. Malik, **"Solid-phase Microextraction – A Solventless Approach to Analytical Sample Preparation", Invited Lecture at the Annual Chemistry Discipline Meeting of Florida Department of Law Enforcement**, Tampa, Florida, USA, July 17, 2002.

A. Malik\*, S. Bigham, A. Kabir, C. Hamlet, C. Shende, C. Tolar, and K. Alhooshani, **"Sol-Gel Materials for Analytical Microextraction" Invited Lecture, ExTech 2002 (Advances in Extraction Technologies)**, Paris, France (July 3-5, 2002).



Abdul Malik, Ph.D.

A. Kabir, C. Hamlet, S. Bigham, T.-Y. Kim, J. Medlar, C. Tolar, and A. Malik\* "Sol-Gel Capillary Microextraction with Organic-Inorganic Hybrid Surface Coatings and Monolithic Beds" **Plenary Lecture**, 25<sup>th</sup> International Symposium on Capillary Chromatography, Riva del Garda, Italy (May 13-17, 2002).

S. Bigham, A. Kabir, C. Shende, T.-Y. Kim, W. Li, J. Medlar, C. Tolar, A. Alli, C. Hamlet, and A. Malik\*, "Sol-Gel Coatings and Monolithic Beds in Chromatographic Separations and Solventless Capillary Microextractions" **Plenary Lecture (Pl. 3)**, 9th Latin American Congress on Chromatography, Cartagena, Columbia (February 20-22, 2002). Proceedings, pp. 9-10.

D.X. Wang, J.D. Hayes, S. Bigham, A. Kabir, C. Shende, T.-Y. Kim, W. Li, J. Medlar, C. Tolar, A. Alli, C. Hamlet, and A. Malik\*, "Sol-Gel Approach to Column Technology for Analytical Microseparations" **Invited presentation** at World Precision Instrument, Sarasota, Florida, USA (January 23, 2002).

A. Malik\*, S. Bigham, J. Medlar, C. Ashford, C. Tolar, A. Kabir, "Capillary Microextraction with Sol-Gel Coatings and Monolithic Beds," **Invited Lecture at ExTech 2001**, Advances in Extraction Technologies Barcelona, Spain, September 17-19, 2001.

A. Malik\*, A. Kabir, C. Shende, W. Li, T.-Y. Kim, S. Bigham, J. Medlar, C. Ashford, C. Tolar, "Sol-Gel Coatings and Monolithic Beds Gas- and Liquid Phase Separation and Sample Preconcentration," **Invited Lecture** at the 24th International Symposium on Capillary Chromatography and Electrophoresis, Las Vegas, USA, May 20-24, 2001.

A. Malik\* and J.D. Hayes, "Sol-Gel Monolithic Columns with *in situ* Created Wall-bonded Organic-Inorganic Hybrid Separation Beds for Capillary Electrochromatography," Twenty-third International Symposium on Capillary Chromatography, Riva del Garda, Italy, June 5-10, 2000.

A. Malik, J.D. Hayes, D.-X. Wang, A. Kabir, S. Bigham, C. Ashford, "New Developments in Sol-gel Column Technology for Analytical Microseparations," Graduiertenkolleg, "Chemistry in Interface" Lecture Series, University of Tübingen, Germany, June 13, 2000.

A. Malik, J.D. Hayes, D.-X. Wang, and A. Kabir, "Surface-bonded Organic-inorganic Sol-gel Coatings and Monolithic Separation Beds: Their *in situ* Creation, Performance, and Analytical Potential in Microseparations," 32<sup>nd</sup> Central Regional Meeting of the American Chemical Society: The Ohio Valley Chromatography Symposium, Covington, Kentucky, May 16-19, 2000, Abstract # 154, p.114.

A. Malik, S. Bigham, J. Medlar, C. Ashford, and A. Kabir, "Sol-gel Approach to *in situ* Creation of Surface Coatings and Monolithic Beds for analytical Microextraction," **EXTECH 2000**, University of Waterloo, Waterloo, Canada, May 1-3, 2000, Abstracts p. 35.

**Abdul Malik, Ph.D.**

**A. Malik\***, D.-X. Wang, and W.-H. Chang, "*New Developments in Sol-Gel Column Technology for High Resolution Gas Chromatography*," Eastern Analytical Symposium (Somerset, New Jersey, November 14-19, 1999).

**Malik\***, D.-X. Wang, J.D. Hayes, W.-H. Chang, A. Deakin, P.A. Mitchell, and Y.D. Hong, "*New Developments in Sol-gel Column Technology for Analytical Microseparations*," 22<sup>nd</sup> International Symposium on Capillary Chromatography (Gifu, Japan, November 8-12, 1999).

D.-X. Wang, W.-H. Chang, A. Deakin, A. P. Mitchell, J.D. Hayes, Y. D. Hong, and **A. Malik\***, "*Sol-gel Approach to Column Technology for High Resolution Gas Chromatography: Current State and Future Prospects*," 21<sup>st</sup> International Symposium on Capillary Chromatography (June 20-24, 1999, Park City, Utah), Abstracts p. 29.

D.-X. Wang, J.D. Hayes, T. J. Scott, and **A. Malik**, "Sol-Gel Column Technology for Analytical Microseparations" Twentieth International Symposium on Capillary Chromatography," Riva del Garda, Italy, May 25-29, 1998 (Plenary Lecture).